REMARKS

Reconsideration of the present application is respectfully requested.

Claim 2 has been objected to due to informalities. More specifically, the Examiner has objected to the recitation of the term "concave" in this claim. Applicant has amended claim 2 to correct cosmetic defects discussed below. This amendment has eliminated recitation of the term "concave".

Therefore, because the amendment to claim 2 has eliminated recitation of the term "concave", it is respectfully requested that the objection to claim 2 be withdrawn.

Claim 2 has been rejected under 35 U.S.C. § 112, second paragraph as being indefinite. More specifically, the Examiner has alleged that it is unclear what direction the term "horizontally vertical" refers to. Applicant thanks the Examiner for pointing out this cosmetic defect in claim 2. For the reasons discussed below, claim 2, as amended, now includes definite language as required by 35 U.S.C. 112, second paragraph.

Applicant has amended claim 2 to eliminate the above noted cosmetic defect. Claim 2 now recites a direction perpendicular to the direction of travel.

Therefore, because claim 2 now recites the present invention in definite terms, it is respectfully requested that the rejection of claim 2 under 35 U.S.C. 112, second paragraph, be withdrawn.

The amendments made to claim 2 were made in order to improve the cosmetic appearance of claim 2 and not due to a substantial reason related to patentability or any other reason that might give rise to estoppel. Therefore, the amendment to claim 2 has not narrowed the scope of claim 2 within the meaning defined in Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. ___ , (2002).

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Claims 1 – 5 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,362,931 to Maruko et al. (Maruko) in view of U.S. Patent No. 5,072,105 to Osawa. Claim 3 has been canceled without prejudice and will not be discussed. For the reasons discussed below, claims 1 – 2 and 4 – 5, as amended, are now in condition for allowance.

Claim 1 has been amended to recite the novel embodiment disclosed, for example, on pg. 5 in which the optical devices 3, 4 are disposed on a top side of the housing and the lens member 6 comprises a pair projections 15, 16. The projections 15, 16 are respectively disposed above the optical devices 3, 4 and substantially in a space defined by a concavity of the optical lens 5 for thereby providing a total output of the pair of optical devices to be substantially constant irrespective of a solar azimuth angle. More specifically, the optical analysis discussed on pg. 8, lines 15 – 20 shows that the solar sensor of the present invention has a total output when incident light is received from the front side (H1 * 2 = 5.6) that is substantially equal to the total output when incident light is received from the right or left side (H2 + H3 = 5.6).

Maruko discloses a sun following-up device for a solar heat utilization device. The sun following-up device includes fish eye lenses 1, 1' laid one above the other on top of a hollow cylindrical member 2 and a casing 7 positioned under the cylindrical member 2. The casing 7 includes a screen glass 8 and photosensistive cells 10, 10' disposed on the undersurface of the screen glass 8. (See Col. 4, Lines 44 – 68 and Col. 5, Lines 1 – 17).

However, Maruko fails to teach or suggest that the optical devices (photosensitive cells 10, 10') are disposed on a top surface of the casing 7. Further, Maruko fails to teach or suggest that the lens member 2 is comprised of a pair projections 15, 16 respectively disposed above the photosensitive cells 10, 10' and substantially in a space defined by a concavity of the fish eye lens 1.

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The Examiner has alleged that the cylindrical member 2 of Maruko discloses a lens member and that this alleged lens member 2 is disposed is a space defined by the concavity of the fish eye lens 1'. However, as shown in FIG. 1, the cylindrical member 2 is disposed below the fish eye lens 1' outside of the space defined by the concavity of the fish eye lens 1'. Applicant questions how this cylindrical member 2 could be disposed in a space defined by the concavity when the cylindrical member 2 is larger than the space defined by the concavity.

Osawa discloses a solar sensor that includes a housing 42 and a pair of optical device 29, 30 disposed thereon. However, Osawa also fails to teach or suggest a lens member comprised of a pair of projections respectively disposed above the pair of optical device 29, 30 and substantially in a space defined by a concavity of an optical lens.

Therefore, because Maruko and Osawa fail to teach or suggest a lens member comprised of a pair of projections respectively disposed above optical devices and substantially in a space defined by a concavity of an optical lens, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. §103 be withdrawn.

Further regarding claim 1, a lens member comprised of a pair of projections respectively disposed above optical devices and substantially in a space defined by a concavity of an optical lens leads to the superior and unexpected results of a total output when incident light is received from the front side (H1 * 2 = 5.6) that is substantially equal to the total output when incident light is received from the right or left side (H2 + H3 = 5.6) as discussed above. A *prima facie* case of obviousness is rebutted by proof of unexpected or superior results. (See MPEP 2144.09 Aug. 2001).

Therefore, because the lens member recited in amended claim 1 leads to the unexpected and superior results discussed above, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. 103(a) be withdrawn.

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Claims 2 and 4 – 5 depend from amended claim 1. Therefore, the rejection of these claims should be withdrawn for the above-mentioned reasons with respect to amended claim 1.

Claim 6 has been rejected under 35 U.S.C. §103 as being unpatentable over Maruko in view of Osawa as applied to Claim 3, further in view of U.S. Patent No. 5,483,060 to Sugiura et al. (Sugiura). For the reasons discussed below, claim 6, as amended, is now in condition for allowance.

Sugiura discloses an optical position sensor 1 that includes a detection portion 10 disposed with the housing. The detection potion 10 includes a film 24 disposed above a pair of optical devices 26X, 26Y. However, Sugiura fails to teach or suggest a lens member comprised of a pair of projections respectively disposed above optical devices and substantially in a space defined by a concavity of an optical lens.

The Examiner has alleged that the film 24 of Sugiura includes projections (24a, 24b). Applicant respectfully traverses this allegation.

The alleged projections are actually slits. (See Col. 4, Lines 55 – 59). According to the Longman Web Dictionary, a projection is defined as "something that sticks out from a surface." (See http://www.longmanwebdict.com). The slits 24a, 24b obviously do not stick out form a surface.

Therefore, because Sugiura fails to teach or suggest a a lens member comprised of a pair of projections respectively disposed above optical devices and substantially in a space defined by a concavity of an optical lens, it is respectfully requested that the rejection of claim 6 under 35 U.S.C. 103(a) be withdrawn.

Further regarding claim 6, claim 6 depends from amended claim 1. Therefore, the rejection of claim 6 should be withdrawn for the above-mentioned reasons with respect to amended claim 1.

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New claims 7 – 10 are presented for examination. These claims recite features that further distinguish the present invention from the art of record. Support for new claim 7 can be found on, for example, pg. 5, lines 8 – 12. Support for new claims 8 – 9 can be found on, for example, pg. 8, lines 15 – 21. Support for new claim 10 can be found on, for example, pg. 5, lines 19 – 27.

Also, new claims 7 – 10 depend from amended claim 1. Therefore, these claims should be allowed for the above-mentioned reasons with respect to amended claim 1.

In view of the above amendments and remarks, the present application is now believed to be in condition for allowance. A prompt notice to that effect is respectfully requested. Please charge any unforeseen fees that may be due to Deposit Account No. 50-1147.

Respectfully submitted,

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MARKED UP VERSION OF THE AMENDED CLAIMS

1. (Amended) A solar sensor comprising:

a housing;

a pair of optical devices respectively disposed [in] on a right side and a left side [on a top side of the housing, respectively,] of an axis parallel to a direction of travel of a vehicle on a top side of the housing;

[an] a concave optical lens that is disposed above the optical devices and guides incident light toward the optical devices; and

a lens member that is disposed between the optical devices and the concave optical lens,

wherein the lens member [includes an another] comprises a pair of [optical lens] projections [that guides] for respectively guiding the incident light to the pair of optical devices, and wherein the pair of projections are respectively disposed above the optical devices and substantially in a space defined by a concavity of the concave optical lens.

2. (Amended) The solar sensor as in claim 1, wherein[:

the optical lens is a concave lens;

the another optical lens is disposed in a space defined by the concave of the optical lens; and]

a first clearance between the concave optical lens [concave] and each of the [another] pair of [optical lens] projections in the direction of travel of a vehicle is [bigger] greater than [another] a second clearance between the concave optical lens and the

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[another] pair of [optical lens] projections in a [horizontally vertical] direction perpendicular to the direction of travel [of a vehicle] on a horizontal plane.

4. (Amended) The solar sensor as in claim [3] 1, wherein[:] each of the [another optical lens] pair of projections has a solid structure.

5. (Amended) The solar sensor as in claim [3] 1, wherein[:] each of the [another optical lens] pair of projections has a hollow structure.

6. (Amended) The solar sensor as in claim [3] 1, wherein[:] a surface of the lens member facing the optical lens is coated with a screen film except on an area under the [projection] pair of optical projections.

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